

**ABSTRACT**

A method and a system for analyzing a semiconductor manufacturing process includes a semiconductor manufacturing process that can generate sets of input and output data. Principal components are generated from the set of input data, and a set of principal component score data are determined based on the principal components. A relationship between the sets of input and output data is determined from the principal component score data and the output data. The system includes at least one storage device and a processor. The storage device stores input data and output data from the semiconductor manufacturing process. The processor is coupled to the storage device. The processor determines principal components from the input data, a set of principal component score data based on the principal components, and a relationship between the input and output data from the principal component score data and the output data.